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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/509,875

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EXAMINER

SYKES, ALTREV C

ART UNIT

PAPER NUMBER

1794

MAIL DATE

DELIVERY MODE

12/04/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/509,875	<b>Applicant(s)</b> SCHWUNG ET AL.	
	<b>Examiner</b> ALTREV C. SYKES	<b>Art Unit</b> 1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 21 August 2009.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) 6-11 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 12-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                    | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)         | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                          |

**DETAILED ACTION**

***Response to Amendment***

1. The amendment to the claims filed August 21, 2009 is acknowledged by examiner and has been entered. Claim 17 has been added.

***Response to Arguments***

2. Applicant's arguments filed August 21, 2009 have been fully considered but they are not persuasive.

Applicants recite that claim 1 requires that "a proportion of polyphenylene sulfide relative to the reinforcing fibers is 0.001 to 0.01 percent by weight." As acknowledged by the Office Action on page 8, Shue et al. does not teach or suggest such a feature.

Examiner is not persuaded and maintains the position as outlined in the last mailed office action of May 21, 2009.

3. Applicant argues that the Office relies on an unreasonably broad interpretation of Shue, and therefore every possible combination of the amount of polymer coating relative to the reinforcing fibers is included.

Examiner notes that just as the claims are given their broadest possible interpretation, the applied references are utilized for all that they suggest to one of ordinary skill in the art.

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Shue is explicit to modifying various percentages of materials for the composites in order to tailor them for intended use.

4. Applicant argues that there are unexpected results which renders the claims unobvious. Applicant further states that there is a maximum PPS content at which ILSS and the BS are optimized; above this maximum PPS content, a decrease in the ILSS occurs.

Examiner notes that ILSS and BS are not properties but tests which have been performed on the final composite. As such, applicant is relying on the fact that Shue did not perform these tests to establish unexpected results. Examiner notes that this is insufficient to overcome applicant's burden of unobviousness. Further, examiner notes that it is of no moment that applicant has submitted articles disclosing the advantage that a composite having PPS has over a composite without said resin. Shue discloses several advantages for including PPS in composites. (See Col 2, lines 56-61) While it is noted that the small amount of PPS as a coating for fibers was directed at increasing interlaminar shear strength and bending strength of composites containing the fibers as recited by applicant in the remarks and specification, applicant is reminded that it is well settled that "the fact that appellant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious." *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd.Pat. App. & Inter. 1985). Therefore, it has been well settled that the recitation of an additional advantage associated with doing what the prior art suggests

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does not lend patentability to an otherwise unpatentable invention. See MPEP 2145.

Additionally, examiner notes that Applicant has not provided a fair comparison between the prior art of record and the claimed invention. Shue contains PPS as set forth in the last mailed office action. However, in the instant specification of applicant, the provided table only compares values within applicant's claimed range with a comparative sample where PPS is 0%. (See pg. 8) Therefore, applicant has not provided evidence of unexpected results and criticality of the claimed range.

5. Applicant argues that examiner has relied on hindsight reasoning by relying upon the disclosed advantages of the claims, as provided in Applicants' own specification, as a roadmap for modifying the applied references.

Examiner has reviewed the last mailed office action and notes that the phrase "as provided in Applicants' own specification" is not used. Further, the references are not modified by combination and the claims are rejected based on only one reference at a time. In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned *only* from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). (*emphasis added*)

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6. Applicant argues Harris cannot be reasonably considered to teach or suggest an amount of 0.001 to 0.01 wt% of PPS relative to the reinforcing fibers.

Examiner is not persuaded and maintains the position as outlined in the last mailed office action of May 21, 2009.

7. For the reasons set forth in the last mailed office action of May 21, 2009 and immediately above, applicants' request for rejoinder is denied. There is not a contribution over the prior art for the recited single inventive concept. As noted in the Office Action dated June 23, 2008, the requirement was deemed proper and made FINAL.

### ***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

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2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

10. Claims 1-5 and 12-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shue et al. et al. (US 4,489,129) and the Merriam-Webster Online Dictionary.

Regarding claims 1, 2, 4, 5, 13, 14, and 16 Shue et al. discloses a coating for reinforcing fibers which would later be incorporated in suitable plastics including thermoplastics. (See Col 1, lines 4-10 and 49-56) Regarding the limitation of a composite material, examiner notes that the Merriam-Webster Online Dictionary defines a composite as being made up of distinct parts. Therefore, the distinct parts of a polymer coating on a reinforcing fiber meets the limitation of applicant. Shue et al. discloses the polymer can be a homopolymers, copolymer, terpolymers or the like. The polymer can also be a blend of such polymers. Suitable polymers include, but are not limited to, poly(arylene sulfide) polymers. (See Col 2, lines 49-56) Shue et al. further discloses poly(phenylene sulfide) is the preferred polymer. (See Col 2, lines 56-61) Shue et al. discloses the reinforcements produced in this manner can be incorporated into a plastic and include carbon, glass, boron, silica, quartz, asbestos, mica and organic material. (See Col 1, lines 52-56 and 64-68) Shue et al. further discloses that the amount of polymer coating on the reinforcement after curing can vary widely. The invention is not limited thereto but it is contemplated that for most purposes the weight percentage of polymer coating will range from about 0.1 to about 10 weight percent. (See Col 3, lines 20-24) Therefore, examiner finds that

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there is sufficient suggestion in Shue et al. to modify the amount of polymer coating on the reinforcements. Shue et al. further discloses because of its availability and desirable properties (such as high chemical resistance, nonflammability, and high strength and hardness) poly(phenylene sulfide) is presently preferred. (See Col 4, lines 1-5)

Therefore, one of ordinary skill in the art would have been easily motivated by the list of known properties and availability of poly(phenylene sulfide) to modify the amount used on the reinforcements in order to tailor the reinforcements for end product use. Where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

Regarding claims 3, 12 and 15, Shue et al. discloses the reinforcements produced in this manner can be incorporated into a plastic to improve strength, stiffness, fatigue life and other properties of the plastic. Suitable plastics include both the thermosetting and thermoplastic types. (See Col 1, lines 52-56) Therefore, as the composition as claimed by Shue et al. et al. has been shown to encompass the components as claimed by applicant, it would have been well within the ordinary skill of one in the art at the time of the invention to incorporate the material into components for aircraft, automobile, machine, plant, and medical components since the type of plastic the coated reinforcements are incorporated into is not limited.



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Regarding claim 17, Shue et al. discloses the weight percentage of the coated reinforcements incorporated into the plastic will depend in great part upon the intended use of the plastic. Generally, the weight percentage of the coated reinforcements will range from 2 to about 75% weight percentage. (See Col 4, lines 6-14) Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to optimize the amount of reinforcing fibers in the composite material motivated by the desire to tailor the composite for intended end use as set forth in Shue.

11. Claims 1-5 and 12-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harris (US 4,910,289)

Regarding claims 1-5 and 13-16 Harris discloses miscible poly(aryletherketone) blends wherein the composition contains (a) from about 98 to 99.9 percent by weight of a miscible poly(aryletherketone) blend with a polyetherimide, certain poly(amide-imides) and/or polyimides, and (b) from about 0.1 to about 2 percent by weight of a poly(phenylene sulfide) or a copolymer thereof. (See Col 1, lines 7-12) Harris also discloses that the discovery that such small amounts of the PPS additive (< 2 weight percent) are effective in promoting fast crystallization rates was totally unexpected. (See Col 4, lines 15-19) Harris discloses that enhanced properties include strength and toughness as well as wear and abrasion resistance. (See Col 2, lines 37-40) The compositions may also include reinforcing fibers such as fiberglass, carbon fibers, and the like. (See Col 22, lines 35-40)

While there is not an explicit amount of PPS taught relative to the reinforcing fibers, examiner has sufficient reason to believe that one of ordinary skill in the art would have been easily motivated to optimize the amount of reinforcing fibers included in the compositions thereby naturally tailoring the PPS relative to the reinforcing. One of ordinary skill in the art would have been motivated by manufacturing requirements for end product use of the composition to optimize the reinforcing fiber amount. Harris discloses the blend of poly(aryletherketone) and PPS may be fabricated into a coating or moulding. The blends may be fabricated into any desired shape and are particularly desirable for use as electrical insulation for electrical conductors. (See Col 22, lines 42-46) Where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

Regarding claims 12, Harris discloses the blend of poly(aryletherketone) and PPS may be fabricated into a coating or moulding. The blends may be fabricated into any desired shape and are particularly desirable for use as electrical insulation for electrical conductors. (See Col 22, lines 42-46) Harris discloses these compositions display excellent mechanical properties as well as excellent chemical and heat resistance. (See Abstract) Therefore, as the composition as claimed by Harris has been shown to encompass the components as claimed by applicant, it would have been well within the ordinary skill of one in the art at the time of the invention to incorporate the material into

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components for aircraft, automobile, machine, plant, and medical components since the type of plastic the coated reinforcements are incorporated into is not limited.

12. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

### ***Conclusion***

13. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the

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advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALTREV C. SYKES whose telephone number is (571)270-3162. The examiner can normally be reached on Monday-Thursday, 8AM-5PM EST, alt Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Larry Tarazano can be reached on 571-272-1515. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/ACS/  
Examiner  
12/1/09

/Jennifer A Chriss/  
Primary Examiner, Art Unit 1794